

AMATEUR RADIO



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AMATEUR RADIO

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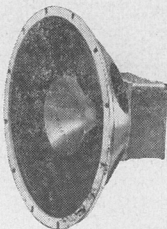
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EDITORIAL



Owing to the increasing difficulty in obtaining copy for publication in "Amateur Radio," the magazine committee has now decided to adopt a new policy by printing technical articles from overseas journals which are not generally available to our readers. The committee feels that a digest of some of the better overseas publications which have been denied the technical reader, because they are not now available on the book-stalls, would provide both our readers and our magazine with technical articles of exceptional merit. This attempt to provide interesting and instructive reading will in no way debar our Australian contributors from forwarding copy to us, but it will enable us to produce the magazine more promptly, as we will have sufficient material available each month in order to go to press on time. Contributions from various listeners have shown an improvement this month, and we are anxious to increase this section. Interstate listeners are requested to forward notes of conditions on short waves together with lists of calls heard.

We have remarked before, and we will repeat, that it causes great discomfort to us to read in the daily press paragraphs relating the detection and punishment of amateur operators, who are using transmitting equipment contrary to the regulations. It seems to us that such cases misrepresent the position, as only one of the offenders appears to be the holder of an amateur operator's certificate of proficiency. These reports cer-

tainly detract from the fine effort of "Amateurs" generally, who have shown their patriotism by joining the services in such great numbers. Over seven hundred amateurs are serving, and we don't see why one thoughtless individual should spoil such a fine response. If you know anyone who is operating his equipment in this way, force him to stop for your own protection as well as the good name of Ham Radio.

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Address enquiries by letter to—
ADJUTANT,

Signals, 7 Aust. Div.,

SEYMOUR.

“Infinite Baffle” Type High Fidelity Loudspeaker

By Courtesy of “Trimax” Transformers Pty. Ltd., Agents for “Goodman’s” English Speakers.

The problems involved in sound reproduction of frequencies, down to 40 cps., lie not only in the driving unit, but also in the method employed to couple the Unit with the surrounding air. The construction of Loudspeaker units capable of giving this response, without resonance, is comparatively easy. Unfortunately, it is impossible to operate such units satisfactorily, due to the enormous size of baffle or horn required for adequate air loading.

With large diaphragm type Loudspeakers, sound waves are radiated from both the front and rear of the diaphragm, and are 180 deg. out of phase with each other. When the air in front of the diaphragm is being compressed, that at the rear is being rarified. This causes air to travel from the front of the Speaker to the rear and vice-versa. Since sound is produced by variations of air pressure, it will be obvious that where the path from front to rear of the diaphragm is comparable to one quarter the wave length of the note being produced, very little radiation will take place. A baffle increases the length of the air path, but it will be realised that when the length of one sound wave at 40 cps. is approximately 27 ft., the difficulty of accommodating a suitable baffle becomes a practicable impossibility. The use of a horn offers very little, if any, advantage over a baffle, from the point of view of size. Theoretically, the diameter of the flare should be equal to a quarter the wave length of the lowest frequency to be reproduced. In practice, this can be reduced slightly, but not sufficiently to make a horn capable of reproducing frequency down to 40 cps., a domestic possibility. To overcome this difficulty, it is usual to so arrange the stiffness of the suspension of the diaphragm to produce a resonance in the bass. Below the resonant frequency this stiffness prevents damage to the diaphragm assembly, also reduces risk of bass modulation of the upper frequencies due to the

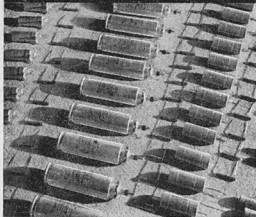
voice coil moving out of the magnetic field.

This method although reasonably satisfactory as a means of increasing bass response, unfortunately introduces resonances higher up the frequency scale, in addition to causing frequency doubling below the fundamental resonance frequency. Although comparatively small in magnitude, these resonances undoubtedly adversely affect the transient response, due to the tendency to artificially prolong the radiation of sound after the applied current has ceased.

Realising all these difficulties, Goodman’s thoroughly investigated the possibilities of “Infinite Baffle” type Loudspeakers. With these loudspeakers the radiation from the reverse side of the diaphragm is confined to an enclosed box. The idea is not new, but hitherto results have been unsatisfactory, due to the fact that loudspeakers of orthodox type, designed for baffle loading, have been used. With such a combination, reproduction is characterised by boominess and lack of low bass. This effect is often termed “box resonance,” and assumed to be the actual resonance of the materials used in the construction of the box. Provided, however, the box is made of fairly thick material, actual box resonance can be ignored. The actual cause of the trouble is of an entirely different nature.

When air is confined in an enclosed space, having a single orifice, the air in the orifice can be made to resonate at a particular frequency which is governed by the volume of air in the box and the area of the orifice. Such a system is termed a “Helmholtz resonator.” A common example of this effect may be observed when a current of air is blown across the mouth of a bottle. With a cabinet, having a loudspeaker unit mounted in one wall, the movement of the cone sets the air in motion, and at the resonant frequency of the system the sound output is considerably aug-

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mented by the resonator effect. Unfortunately, the stiffness of the cone suspension is added to the stiffness of the air in the box, with a consequent rise in the resonant frequency. For example, a loudspeaker having a fundamental resonance at a frequency of 50-60 cps. whilst operating in free air, has, when mounted in a medium size cabinet, a resonance well above 100 cps. This, of course, would be very objectionable. Additionally, the output below the resonant point would be considerably attenuated due to the added stiffness. If, however, a special loudspeaker unit is used, designed to have practically no mechanical restrictions of diaphragm movement, so that the fundamental resonance is below 20 cps., then the resonance of the complete system can be brought down to a frequency practically below audibility. Actually, for Goodman's "Infinite Baffle" Loudspeaker a final fundamental resonance at 40 cps. is used. This gives a slight lift in the response at this frequency, which is probably the lowest audible note likely to be encountered.

To obtain such an extremely low resonance, the actual diaphragm surround is entirely dispensed with, the cone edge being held central by means of three radial strips of very light material.

A large diameter centreing device, having exceptionally long arms, maintains the voice coil in a central position in the magnetic gap. Some degree of the extreme flexibility of the suspension may be gauged by the fact that if the diaphragm is lightly blown a movement of over $\frac{1}{4}$ inch may be obtained.

Due to the absence of any restraint at the edge of the cone, almost complete elimination of cone resonance is obtained. This combined with an extremely high flux density magnet, and light diaphragm assembly gives a phenomenally good transient response. The ability of this loudspeaker to give really faithful reproduction of percussion instruments, etc., is probably one of its most notable features.

To reduce risk of chassis resonance and sound reflection, a specially designed cast aluminium chassis, consisting of three streamline arms radiating from a plate fixed at the back of the magnet, is used. The large diameter centreing device is located on small bosses on the chassis.

(Continued on Page 9)

Broadcast Music

DIFFICULTIES IN GIVING FAITHFUL REPRODUCTION OF ALL MUSICAL TONALITIES.

By Douglas N. Linnett.

Despite the remarkable progress that has been made, all forms of mechanical music, such as broadcasting and the gramophone, still fall short of the original performance.

The slight imperfections are in the volume handling and in the frequency range. The cause of the trouble is the mechanical limitations set by land lines, amplifiers, and other equipment included in the chain between the performer and the listener.

Such disabilities are inherent in the apparatus, so that it is necessary to introduce a general supervisory control to compensate for the inability to handle successfully, the wide variations in sound met with in any musical number.

For instance, an orchestral item introduces an extremely wide range between the softest and the loudest passages. They place a very big strain upon all of the transmitting equipment from the microphone, to the aerial which cannot reproduce all the tonalities faithfully.

Of course the apparatus would not break down; but it cannot accomplish the difficult task of reproducing, with equal facility, the upper as well as the lower limits of range in tone, and at the same time deal with the infinite variety between them.

The variations are so wide that no land line, or transmitter for that matter, could successfully handle them. Outside noises are apt to override the pianissimo passages, while the fortissimo would overload the equipment.

Fortunately, the ear is not as sensitive to change as electrical equipment, and it has been found that realistic reproduction can be obtained when the variations are condensed between one and thousand instead of one and a million as found in an orchestral item. The smaller variations can easily be handled by modern equipment.

The original volume variations, therefore, have to be condensed in some manner so that they will fit

within the safe limits as set by the mechanical apparatus. This can only be done by some form of control which must be handled carefully to retain the colour of the original. Naturally, the control must be near the initial performance.

Many expedients have been tried; but as yet, no satisfactory solution has been found. It is a very real problem that has received much thought and research by broadcasting organisations throughout the world.

Manual control approaches closest to the ideal. Unfortunately, this introduces the human element as responsible for maintaining the best results. Everything depends upon the operator, who must have a comprehensive musical appreciation because it is within his power to spoil the whole programme from an artistic point of view.

This operator must be fully aware of the tonal variations in the music to be broadcast, because he must adjust his equipment to the proper operating level without affecting the balance of the work.

So he can make or mar the whole programme since everything depends upon his appreciation of the requirements in the music to be broadcast.

It would be impossible for him to give listeners a faithful reproduction of the original unless he had a very sound knowledge of music. He has to anticipate the change. An adjustment, more or less sudden, would alter the volume in a manner not intended by the conductor or composer; while he may allow the fortissimo passages to commence before toning down. That would distort the music.

Eagerness may also cause trouble, because the operator may adjust the level of volume to avoid loud passages, with the result that the soft notes become almost inaudible.

The difficulties are quickly appreciated. The control operator must be a versatile musician as well as a competent radio technician at the

present stage in the technique of broadcasting. In effect, he is the conductor for the radio audience, and the chief person responsible for the artistic and realistic reproduction of any musical item.

The work is well done, as listeners can judge any evening, for it will not be disputed that broadcasting has reached a plane which is capable of giving genuine musical pleasure to the critical listener. The shortcomings in the equipment are not readily perceptible.

Another difficulty met with in broadcasting music comes from blending the various instruments to give due emphasis to each part. This has a definite bearing upon the reproduction of mechanical music.

Musical sounds have different carrying qualities, so that one affects the microphone more than another. The instruments, therefore, must be placed in relation to the microphone so that one section does not drown another, or the wood wind swamp the strings.

Unfortunately, no hard and fast rules can be laid down, as conditions

vary so much from studio to studio, with the result that trial and error becomes the only guide. This begins by placing the violin near the microphone on account of its soft tone compared with other instruments of harsher note.

For instance, a jazz band would be so placed that the violins would be near the microphone and the piano close by at the side. Saxophones and clarinets would be further back, and the harsher wind instruments, such as cornet and trombone, would be at a greater distance still. Banjo, traps, and drums would find themselves as far as possible away from the microphone because their sharp tone has a tremendous carrying power.

The soft reed instruments of a band be placed well forward, and the larger, such as French horns and trombones, would be at the back of them. Snare drums and base drums would be as far away from the microphone as possible.

The cello in the studio orchestra would take the position nearest the microphone, and the piano would be

(Continued on Page 13)

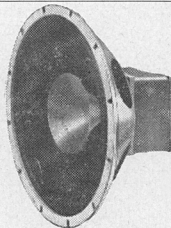
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News in English from Abroad

Regular Short-Wave Transmissions.

Reprinted from "The Wireless World." (With acknowledgements).

NOTE:—Times shown British Summer Time. Add 9 hours for Australia.

Country:	Station	Mc/s	Metres	Daily Bulletins (B.S.T.)
America				
	WNBI (Bound Brook)	17.78	16.87	6.0.
	WCBX (Wayne)	6.12	49.02	7:55 a.m.
	WCBX	9.65	31.09	5.0 a.m.
	WCBX	11.83	25.36	12.30 a.m.†, 12.45 a.m.†, 2.55 a.m., 11.50§†
	WCBX	15.27	19.65	7.30§
	WCBX	17.83	16.83	2.0, 3.0†, 5.0†
	WGEO (Schenectady)	9.53	31.48	12.25 a.m., 9.30†, 10.55§†, 11.15†.
	WGEA (Schenectady)	9.55	31.41	12.15 a.m.
	WGEA	15.33	19.57	2.0, 10.55§†.
	WGEA	21.50	13.95	9.30.
	WPIT (Pittsburg)	6.14	48.86	4.0 a.m.†, 5.0 a.m.†, 5.30 a.m.†.
	WPIT	11.87	25.27	12.45 a.m.†.
	WRUL (Boston)	6.04	49.67	12.0 midnight.
	WRUL	11.79	25.45	9.30§†.
	WLWO (Cincinnati)	6.06	49.50	7.25 a.m., 12.0 midnight†.
China				
	XGOY (Chunking)	11.90	25.21	12.10, 11.0.
Finland				
	OFD (Lahti)	6.12	49.02	12.40 a.m., 7.20, 9.40, 10.30.
	OFD	9.50	31.58	12.40 a.m., 2.15 a.m., 7.20, 10.30.
	OIE	15.19	19.75	12.40 a.m., 7.20, 10.30.
France				
	— (Paris Mondial)	9.52	31.51	2.0 a.m., 4.30 a.m., 6.15 a.m.
	TPA4	9.68	30.99	9.15 a.m., 8.30.
	TPA4	11.72	29.60	2.0 a.m., 4.30 a.m., 6.15 a.m.
	TPA3	11.88	25.25	2.0 a.m., 4.30 a.m., 6.15 a.m., 9.15 a.m., 8.30.
	TPC3	17.77	16.88	12.0 noon.
French Indo-China				
	F2R (Saigon)	11.78	25.47	12.0 noon, 4.30.
Germany				
	DJC (Zeesen)	6.02	49.83	8.0
	DXM	7.27	41.27	12.15 a.m.
	DJI	7.29	41.15	11.15.
	DJA	9.56	31.38	7.15.
	DXB	9.61	31.22	8.15, 9.15.
	DJB	15.20	19.74	10.15 a.m., 2.15, 5.15.
	OLR5A (Podebrady)	15.23	19.70	8.50
Hungary				
	HAT4 (Budapest)	9.12	32.88	12.30 a.m.†, 1.30 a.m.
	HAS3	15.37	19.52	2.55†.
Ireland				
	Athlone	9.59	31.28	6.45, 10.0 (10.5 Sun.).
		17.84	16.82	6.45, 10.0 (10.5 Sun.).
Italy				
	I2RO3 (Rome)	9.63	31.15	4.0 a.m., 7.35 a.m., 7.28, 10.15.
	I2RO9	9.67	31.02	12.30 a.m.
	I2RO4	11.81	25.40	4.0 a.m., 4.45, 8.25.
	I2RO6	15.30	19.61	4.0 a.m., 7.35 a.m., 12.15, 8.25.
	I2RO8	17.82	16.84	12.15, 4.45.
Japan				
	JVW (Tokio)	7.25	41.34	9.5.
	JZI	9.53	31.48	9.5.
Manchukuo				
	MTCY (Hsinking)	11.77	25.49	3.50, 7.30, 10.0.

Country: Station	Mc/s	Metres	Daily Bulletin (B.S.T.)
Rumania			
Bucharest.....	9.28	32.33	10.55†.
Russia			
RNE (Moscow).....	6.00	50.00	11.0.
RW96.....	6.03	49.75	1.0 a.m., 9.0, 10.30.
RWG.....	7.36	40.76	10.30.
RKI.....	7.52	39.89	10.30.
—.....	8.07	37.17	9.0, 10.30.
—.....	9.53	31.48	11.0.
RAL.....	9.60	31.25	1.0 a.m., 9.0, 10.30.
RW96.....	9.68	30.99	9.0.
—.....	11.64	25.77	11.0 a.m.
—.....	11.90	25.21	11.0 a.m.
RNE.....	12.00	25.00	1.0 a.m., 4.0†.
RKI.....	15.04	19.95	1.0 a.m.
RW96.....	15.18	19.76	8.0 a.m.
Spain			
FET1 (Valladolid).....	7.07	42.43	8.45.
EAJ7 (Madrid).....	9.86	30.43	4.25.
Sweden			
SBO (Motala).....	6.06	49.50	10.45.
SBU.....	9.53	31.48	10.45.
SBT.....	15.15	19.80	7.15.
Turkey			
TAP (Ankara).....	9.46	31.70	8.15.
TAQ.....	15.20	19.74	1.15.
Yugoslavia			
YUC (Belgrade).....	9.50	31.58	10.30.

(Continued from Page 5)

arms. This method of construction produces an extremely rigid assembly with a minimum of material. This centreing device is of unusually open construction to minimise risk of sound radiation from the device itself in addition to reducing reflection. The loudspeaker cabinet is approximately an 18 inch cube, and is made of thick section laminated board. To prevent reflection and the formation of standing waves at high frequencies, the inside is lagged with special sound absorbing felt.

In general design, the diaphragm assembly follows the same general principle as that used in the 10 inch High Fidelity Auditorium Loudspeaker (the construction of which is dealt with in detail in our Technical brochure, "The Attainment of an Ideal"). Both the main and centre cones are made from slightly different materials to those used for the diaphragms of the 10 inch High Fidelity Auditorium Loudspeaker, to compensate for the difference of loading. The Permanent Magnet has an extremely high flux density, giving an exceptional degree of magnetic damping to the voice coil. An interesting experiment is to short circuit the voice coil and gently pull

the diaphragm forward for about $\frac{1}{4}$ inch. When released the diaphragm takes 2 to 3 seconds to return to normal. This test will serve to illustrate the entire absence of resonance in the unit.

To sum up, the advantages claimed for the "Infinite Baffle" Loudspeaker are:—

- (1) Really true reproduction down to 40 cps.
- (2) Complete freedom from frequency doubling.
- (3) Exceptionally good transient and high note response.
- (4) Freedom from "colouration" (due to reduction of cone resonance).

An additional feature of this loudspeaker is that the acoustic output increases with rise in frequency up to 5,000 cps. Above this frequency the output remains practically level to 12,000 cps. Since it is very seldom that audition takes place directly on the axis of the loudspeaker, it is felt there should be some compensation for the focussing of high notes, which is, unfortunately, inevitable. The rise in output is not taken beyond 5,000 cps., as this would only increase background noise to an unbearable extent.

Short Wave and DX Section

OVERSEAS BROADCASTING.

A Monthly Retrospect.

By Jack Harrower,
(Short Wave Editor, "Radio Times.")

The freedom of another independent state has been sacrificed at the Altar of Nazism.

As I write, the Netherlands army has surrendered before the terrific onslaught of the invader. With their surrender the greater part of Holland falls into the hands of Germany, including the headquarters and factory of Philips Radio, Eindhoven.

Although their business activities will be carried out by the various Philips agencies throughout the world, amateur operator and DXer alike will miss the cheery word of greeting from their international short wave transmitter, PCJ, the "Happy Station."

PCJ succeeded in portraying an atmosphere of friendship and goodwill even at a time when the country was in constant fear of attack.

On March 12, 1927, the Philips Radio Laboratory, in Eindhoven, first bridged the gulf between Holland and its colonies with its experimental transmitter, PCJJ.

This great feat was greeted enthusiastically by settlers in the Dutch East and West Indies, who promptly brought up the question of a broadcasting service for the colonies, and so the PHOHI (Philips Broadcasting Holland-India) came into existence.

In the autumn of 1929, the first transmissions by the new PHI were broadcast on 16.88 metres. The results were good from the beginning, and the station soon became an integral part of the Dutchman's life in the outposts of the Fatherland. The PHOHI brought the Dutchman compensation in his loneliness far from the homeland.

Internal dissension in Holland, however, led to the closing of PHI for two years, at which time strong agitation for the re-opening of the service was commenced. The station was ultimately re-opened on December 24, 1932. Satisfactory results were not obtained until April 16, 1934, after many months of experimental work carried out on different frequencies.

After so many years of activity one

of the true pioneers of short wave broadcasting is absent from the dial. Perhaps PHOHI will again call the world in the not so distant future through PCJ, the "Happy Station."

The broadcasting services of two other countries also suffered at the hands of the invader. They were "Radio Luxembourg," Europe's most powerful long-wave commercial outlet, and the Belgian network.

"Radio Luxembourg" had planned the use of short wave as an expansion to its long-wave service, but this was abandoned at the outbreak of war. ORK, Brussels, operated on 29 metres with a power of 11 kw., but was not consistently heard in Australia.

S.W. SNIPPETS.

CBS and its international short wave outlets, **WCBX** and **WCAB** are broadcasting a series of "Salutes to the Americas" to the 1940 New York World's Fair. All the programmes originate from Latin America and are short-waved Monday, 5 a.m. A.E.S.T., and feature national and folk music supplemented with talks by Government officials. The opening salute came from Brazil.

The American service of "**Paris Mondial**" has been rearranged resulting in the 11 a.m. programme closing at 3.45 instead of 3.30 p.m. and the Californian broadcast being advanced 15 minutes, and is now slated from 4 to 5 p.m. The 11 a.m. schedule is radiated on 11,720, 11,845, and 9,520 kc., and the latter broadcast on the one frequency of 9,520 kc. "Paris Mondial" is one of the best signals on 25 metres in the afternoon.

Possibly one of the best signals from the point of view of strength, quality and entertainment value is the NIORM transmitter YDC 15,150 kc. in their late afternoon broadcast. The programme comes in between 6 and 7.30 p.m. A.E.S.T., and light music is played throughout. One interesting feature is that no announcements are made excepting on the half hour, and the programme consists mainly of popular American recordings.

The Eastern District zone of North America is now being covered from Tokyo through JLS2 16.81 metres 17,845 kc.

TAP, Ankara, Turkey, is now operating from 3 a.m. to 8 a.m. daily on 9645 kc.

FFZ, Shanghai, is nightly heard on 12,090 kc., when opening at 8 p.m. The station is operated from the French quarter of the international settlement.

KGEI is forwarding an interesting brochure on the 1940 Golden Gate Exposition at Treasure Island, to all listeners sending reports.

ETHERettes.

Annual report of Columbia Broadcasting System shows a net profit for 1939 of over five million dollars, as compared with three-and-a-half millions for 1938. There was a net loss of 72,975 dollars by the Columbia Recording Corp.

Regarding television the report stated that the CBS actively continued preparation for television broadcasting in New York with studio facilities constructed in the Grand Central Terminal building and studio equipment installed.

Gerald Cock has arrived in N.Y.C. from England to take up his new position as American rep. for B.B.C. He is successor to Felix Greene, who plans going into the motion picture industry in U.S.A.

Edward Braddock, with R.C.A., Camden, for the past 11 years has been appointed manager of amateur radio sales for the company. Ed. operates ham tx W3BAY from his home in Haddonfield, N.J.

Joseph Conn, N.B.C. television engineer, married Leonore Kingston, Chicago radio actress, on April 1. Both hams, the couple have been communicating via the H.F.'s between New York and Chicago since July last year.

The three electrode vacuum tube invented by Dr. Lee De-Forest, Jan. 1907, was selected as one of the 19 greatest inventions, by a committee of scientists and industrialists during observance of 150th anniversary of the signing of the first American patent law.

WSJC, Winston-Salem, Nth. Carolina, joins N.B.C., June 26, as the 188th affiliated station. Formerly affiliated with CBS the station operates on 1310 kc. with 250 watts.

WDRG has filed an application with the FCC for a 50 kw. Frequency Modulated station. It figures on reconstructing the 1,000 watt W1XPW, which it now has on the Meridian Mountains and operated on FM.

W1XPW was the first licensed FM station in U.S.A.

The FCC has revoked the licence of KGFI, Texas. Charges are same as the six whose licences were ordered revoked last month. It was charged that the station transferred stock without FCC authorization.

SHORT WAVE NOTES.

By F. Smith.

The following stations are regularly heard on the bands indicated, from midnight onwards.

25 metres.—Rome.—English news session, 1.40 a.m. Signal strength is usually only fair at this time.

Paris.—Also gives English news at about the same time as Rome, but signal strength is a little better.

Saigon.—Re-broadcast above news, but are putting in a much stronger signal.

London.—News at 2 a.m. at good signal strength.

India.—News session in English at 1.50 a.m. Very strong signal.

China.—Call sign of this station is doubtful. Two different sources give at FFZ and XFZ. Fair signal strength, giving news in English at 12.55 a.m.

Manchukuo.—M.T.C.Y. Broadcast in English at 1.15 a.m. Signal strength is very good.

31 metres. — U.S.A. — KGEI.—News in English at 12.30 a.m. Good steady signals. W6FFN was logged on the 20 m. band at 1.25 a.m. at R7.

Phillipines — KZRM — Fair signal strength. Close down, 1.30 a.m.

KZRH.—Also fairly constant signal after midnight.

VLQ5 and VLR, Australia, are giving good reception of an early morning.

Static and other noises were more or less non-existent over the month ending, May 18th, when this list was completed.

AROUND THE DIAL.

Overseas Stations Heard

By J. F. Miller.

DXU—15,320 Kc. 19.58 m.—Berlin —One of the new German and is received at quite good strength.

DJQ—15,280 Kc. 19.63 m.—Berlin —Only a little below strength of DJB. Frequently carries the same programme. English news at 10 p.m. appears to be stopped from both stations.

DJB—15,200 Kc. 19.74 m.—Berlin —This station is heard regularly and

at almost any time of the day or night. Particularly good around midnight.

DXS—15,160 Kc. 19.79 m.—Berlin—Another of the new ones, and also heard at fair strength. All these three DX stations appear to have same programme.

DXT—15,230 Kc. 19.70 m.—Berlin—Is also one of the new Germans heard at fair strength during the early morning.

GSF—15,140 Kc. 19.82 m.—London—Heard regularly whenever on the air. Always at good strength, particularly around midnight.

TPA2—15,245 Kc. 19.68 m.—Paris—Good around 2.0 a.m. when this station closes with the "Marsellaise."

JKZ—15,160 Kc. 19.79 m.—Tokio—Excellent station, with news in English at 10.30 p.m. Bad interference when DXS is on the air.

PCJ2—15,220 Kc. 19.71 m.—Huizen Holland—This station last heard on the 24th March with a special broadcast to the Far East, which opened at 11.57 p.m.

VLM6—15,275 Kc. 19.6 m.—Sydney—This phone station heard calling KNY, San Francisco, at 1.50 p.m. on 25th March.

2RO6—15,300 Kc. 19.61 m.—Rome—Particularly good around 4.0 p.m., with English news at 4.35 p.m.

HCBJ—12,460 Kc. 24.08 m.—Quito, Ecuador—Has improved slightly, but is badly spoilt by morse.

FFZ—12,050 Kc. 24.89 m.—Shanghai—This new French station can be heard clearly at 1.0 a.m. with news in English, followed by one hour's uninterrupted musical programme.

RNE—12,000 Kc. 25.0 m.—Moscow—This Russian is excellent around 2.0 a.m., and can be heard quite well at various other times.

XGOY—11,900 Kc. 25.21 m.—Szechwan, China—One of the regularly heard at fair strength.

TPA4—11,835 Kc. 25.24 m.—Paris—Excellent strength around 3.0 a.m.

VUD4—11,870 Kc. 25.28 m.—Delhi, India—Most lists show this station as VUM2, Madras, but recent verification gives it definitely as this call. Heard regularly around 10.0 p.m.

GSE—11,860 Kc. 25.29 m.—London—Heard around 1.30 a.m. at good strength.

TPC8—11,845 Kc. 25.33 m.—Paris—Particularly good during late afternoon. Closing at 4.0 p.m.

2RO4—11,810 Kc. 25.4 m.—Rome

—Good during the early morning and till 8.0 a.m.

JZJ—11,800 Kc. 25.42 m.—Tokio—Quite good during both morning and evening. News in English at 10.30 p.m.

Saigon—11,780 Kc. 25.47 m.—French Indo China—This is one of the loudest stations on the band. Woman announcer asks for reports at 7.0 p.m.

DJD—11,770 Kc. 25.49 m.—Berlin—Heard quite well in the early morning.

XGOK—11,650 Kc. 25.75 m.—Canton, China—Seems to be mainly native programme.

GSD—11,750 Kc. 25.53 m.—London—This is one of the most regular and loudest of the London stations.

TPB7—11,718 Kc. 25.6 m.—Paris—Excellent strength just before 4.0 p.m. Reports asked for, address given as French Government Short Wave Station, Paris, Mondial, 12 Rue Armand Moisant.

PLP—11,000 Kc. 27.27 m.—Bandoneng, Java—Just fair, but comes in regularly.

PMN—10,260 Kc. 29.24 m.—Same location, carries same programme as PLP.

ZHP—9,700 Kc. 30.94 m.—Singapore—Re-broadcast B.B.C. news service at 11.30 p.m.

KZRH—9,640 Kc. 31.12 m.—Manilla—A good regular station, with excellent musical programme. News at 11.45 p.m.

2RO3—9,630 Kc. 31.15 m.—Rome—Heard at 8.0 a.m. at particularly good volume.

VUD3—9,590 Kc. 31.28 m.—Delhi—Regularly heard at good strength.

KZRM—9,570 Kc. 31.35 m.—Manilla—Another regular on this band. Has excellent "Quiz" programmes. News in English at 10.45 p.m.

DJA—9,560 Kc. 31.38 m.—Berlin—Fair strength only.

KGE1—9,530 Kc. 31.48 m.—Treasure Island, U.S.A.—New, coming through at excellent strength. Good news service at 12.30 a.m.

WGEA—9,556 Kc. 31.41 m.—Schenectady, U.S.A.—Heard in special broadcast to Far East at terrific strength around 4.0 p.m. Reports asked for.

TPC—9,520 Kc. 31.51 m.—Paris—Another French station heard at excellent strength around 4.0 p.m.

HSP6—7,968 Kc. 37.65 m.—Bankok Thailand—Heard just before closing at 11.45 p.m.

(Continued from Page 7)

to its right. Violins are behind them and next follows the traps and drums, bass saxaphones, slide trombone, clarinet and cornet.

Such relative positions are necessary in order that the music will be blended harmoniously at the microphone. The effect is thoroughly appreciated when one takes the trouble to distinguish and make a note of the different instruments, stating whether they sound natural or not.

Very keen ears will be required to detect the deficiencies in the equipment whether it is in respect of fundamental tones, or in regard to the harmonics set up by the various instruments. Nowadays, there is nothing of the harsh, tinny, mushy or blurred notes that were the rule rather than the exception a few years ago, for broadcasting can now give the most realistic music, from which the critical listener can derive real pleasure.

RADIOTRONICS BULLETINS.

New Issue Released.

The latest issue of Radiotronics by Amalgamated Wireless Valve Co. Pty. Ltd. is bulletin No. 103, in which an announcement is made that type 6J8-9 and five of the 1.4 volt GT series of valves, are now being manufactured in Australia. This brings the total of Australian made Radiotrons to fifty-five (55)—a complete list of these being given.

An item of particular interest at the present time is that describing low screen voltage operation of the beam power tetrode Radiotron 6V6-G. With a bias of —5 volts and a total cathode current less than 20mA, a power output of 1.5 watts is obtainable with a load of 14,000 ohms.

This is a suitable arrangement for small table model receivers where low heat dissipation is essential. The high grid sensitivity is also a valuable feature.

(Continued on Page 16)



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Divisional Notes

IMPORTANT.

To ensure insertion, all copy must be in the hands of the Editor not later than the 18th of the month preceeding publication.

NOTES FROM FEDERAL HEAD-QUARTERS.

Calendar No. 24 of the I.A.R.U., although dated December, 1939, did not arrive until April. Main items consist of a list of member societies and information as to their activity or otherwise. Twenty-six out of thirty-five are off the air, those continuing normal operation being Columbia, Cuba, Estonia, Hungary, Japan, Mexico, Spain, United States, and Venezuela.

Most societies appear to be carrying on, although in some European countries mobilisation has caused the cessation of all organised activity.

The C.C.I.R. conference, scheduled to have been held in Stockholm in June, 1940, has been postponed to a later date as yet undetermined.

The Burma Amateur Radio Society (B.A.R.S.), and the Lietuvious Trumpuju Bangu Radio Megeju Draugija (L.R.M.) Lithuania, have been admitted to membership of the I.A.R.U. and proposed new member societies are the Manchoukuo Amateur Radio League (M.A.R.L.) and the Radio Club Argentino (R.C.A.) Argentine.

VICTORIAN DIVISION. KEY SECTION NOTES.

By VK3CX.

The May meeting opened shortly after 8 p.m., with a fairly large attendance, and R.J. in the chair. Our visitors included G6LU, VK2HY, and VK3HG, and the warmth of their reception almost embarrassed them, which is saying something when you remember that they are hams.

The event of the evening was a most interesting lecture by Bert Hodge, VK3HE, on "Wired Wireless." He had the close attention of his audience, and at the conclusion of his talk, was kept answering questions for at least half an hour.

Another interesting visitor was 3TU resplendent in the uniform of a "Loot" in the A.I.F. Jim gave an interesting talk on the transmitters and receivers used in the Army, and

appealed for volunteers from amongst the ham ranks to work them, so if anyone wants a free trip to ZC6 they know where to apply. The usual questions were asked about when we were going to get on 2½ metres, and the representative of the Council gave a report on the possibility of incorporating features from "Radio" and "QST" in our magazine in the near future.

IK was there looking fit after several months in camp looking after the signals, and is now teaching a certain YL all there is to know about ham radio. RX was back in the fold, making witty remarks after a successful marriage, which hasn't repressed him in any way. RN has been trying cardboard tubing as a pick-up arm—no it's got nothing to do with women—and says that it is better than aluminium. UR has been putting lots of aluminium around his receiver, and talking of receivers, HK has at last got his 1852 tube in place of a 6C5 as oscillator. Thinks that the 1852 will make a good osc. for 28 and 56 mc work. His RX uses 2 I.F. freqs. 3000 and 525 kcs, the latter being coupled by four infinite rejection couplers and the result is single signal operation without a crystal.

IG says he has got a good alibi if the R.I. comes around, because his rotary beam is now covered with spiders webs. WQ has moved to Kew, and threatens to disturb the air around there when we get back on the air. FR has entirely shielded his RX, and now spends most of his time on the road with his car. Don't know what he will do if petrol goes up any further tho.

VQ is in the R.A.A.F. signals office, and probably gets plenty of radio there, but that doesn't excuse him when we learn that he has wrecked his communications receiver and made it into a dual-wave job. QK is farming down at Churchill Island and mournfully surveying the wide open spaces where the Vee beams

would be but for Adolf the twerpst.

KV is now the proud owner of a Junior Op., and is anxious to get back on the air and add to his 8 contacts before the aforesaid junior op. gets his ticket and beats his OM to it. DA is thinking of building a deluxe combined frequency meter-monitor-scope output meter while the going is good, and QV is in the process of building a new receiver covering all bands, including brass bands, string bands, rubber bands, etc.

ZU is taking the big jump—yes, the war must have been the cause of it as he couldn't go on the air, so had to spend his time with the YL and is now getting married and moving to Warrnambool. His new hobby is gardening. Anyway, all wish you the very best.

RJ has got rid of QRM and now devotes some time to listening. His enthusiasm in burning some QSL cards the other day had rather disastrous results, as he burnt the bottom out of the bath heater. Must have been one of those hot cards from W8DWV.

As the liquor referendum has long since passed, I cannot be accused of propaganda in retelling this story—It appears that an anti-liquor meeting was in progress and the lecturer said, "I now propose to carry out an interesting experiment—I have here two bottles, one containing water and the other alcohol. I now take an ordinary earth worm and drop it into the water—see, it is unharmed and swims around. I now take it out and drop it into the alcohol—ah, it shrivels up and drops to the bottom dead. Now, what does that prove?" A beer sodden voice answered from the back of the hall—"If you've got worms, drink beer!"

Cheerio, gang, until next month, when a further lecture is promised, so roll up.

NORTHERN ZONE NOTES.

By 3ZK and 3BM.

These notes have been missing in the last couple of issues of "A.R." The usual scribe has, no doubt, other things to keep his mind occupied, so I will endeavour to fill the gap for this month.

News is rather scarce as means of communication have been interrupted.

3EC, our local inventor, is a man of many parts. He was treasurer at

a recent flower show in this town. He said it was bad luck we are off the air. The cash he had would have bought quite a nice outfit. He has also made an arrangement to copy the C.W. from various sources. The system is similar to the tape systems seen at many railway stations. His latest is a generator. May be able to give more details at a later date. It depends how everything works out.

3JG has been on a visit to V.I.M. The baby Ford is still going places.

3CD is still in the district, his activities unknown.

3XF is a newcomer to the ranks of hamdon and W.I.A. membership. Les by name, situated on a wheat farm between Rupanyup and Murtoa. Was on 40 mx cw from batts for 3½ months before the fateful September 1st. Les had a V beam planned and the material to hand at that date.

3CE—Roy's letter is just like one of our FB rag-chews of the good old days. All about tractors, fallow, sheep and radio. Intends to complete the new 3 tube super and get some morse practice this winter.

3PR.—Ron is expecting the A.C. line to come along his way, after which he will build himself a 6 or 8 tube A.C. super. He built an electric fence from a Ford coil and has the bull bluffed! He says 3IV is in Stawell, so that 3YW is not the only ham there.

Jim, 3DI, is still vy QYL and, I believe, is getting married soon.

It is reported that 3OR has gained a commission in R.A.A.F. and is now a Flying Officer. Heartiest congrats., Murray!

3JG has completed his yacht and it's a beauty.

3QZ has built himself a very satisfactory producer gas plant for his Chev. Did you see the page devoted to it in the "Sun," complete with photo of the smiling 3QZ and the woiks?

3TL has started a Stamp Club in Kerang, and is running it with all the old efficiency and enthusiasm. Still suffers from the effects of that accident of months ago.

Chas. Stanford called here on his final leave. Expects to go in the "next lot." Good luck, Charlie!

3BM was laid up for two months when a bag of wheat fell on his right leg from a considerable altitude. Is still rather shaky on the pins, but managed a month's holiday to Sydney.

3RA. Still helping to keep local B/C station on the air. Hitting the high spots in his spare time. Is waiting to be called up for compulsory training.

3IH has been in camp for three months and is now back at Melb. Tech. swatting.

3HX has at long last settled in Melbourne. Hams should beware when they see a 1938 black Chev. approaching. It may be 3HX. You'll see the call letters on the wind screen.

3NN. No news to hand.

3ZK. Radio activities practically nil. Spiders, etc., having a great time in the shack. Gardening has been the main hobby. Annoy 3EC on occasions. Both 3EC and 3ZK were close to learning to play the harp. Reason. 3ZK and 3EC had a conference which lasted till 0050. 3EC's YF intervened. 3EC 3ZK hurried exit.

Would members of the zone please communicate with 3BM or 3ZK advising their doings. By so doing you are helping to keep the mag. in circulation, and also the W.I.A. functioning. Don't forget, the W.I.A. is our mouthpiece. Unity is strength, so do your bit to help.

S.A. DIVISION NOTES.

By D. S. Robertson, VK5RN.

At a general meeting, held on Wednesday, April 17th, it was decided to have quarterly meetings for the duration of the war, instead of holding them weekly in the form of code practices, as has, up till now been the case. This change has been made because of the poor attendance that we have been having.

Those present at the meeting were, Mr. J. McAllister, Mr. Elliott, 5RD; Mr. Kilgariff, 5JT; Mr. Adey, 5AJ; Mr. Baseby, 5BZ; Mr. Ragless, 5GR; Mr. Bourne, 5BU; Mr. Pearn, 5PN; Mr. James, 5BL; Mr. Hashard, 5RH; Mr. Sullivan, 5JK, Mr. Robinson, 5HN, Mr. Evans, 5OW; Mr. Goldsmith 5HM; Mr. Lucas, 5LL; and myself.

After heated discussion, it was decided that the quarterly meetings should be in the form of "smoke socials," and that each member should pay a minimum of 2/- in order to pay for refreshments.

After the secretary had read through the year's accounts, the council was elected, and new subscription rates were fixed.

The new council is as follows:—Mr. Kilgariff, 5JT, President; Mr.

Ragless, 5GR, Vice-President; Mr. Evans, 5OW, Treasurer; Mr. R. D. Elliott, 5RD, Secretary; Mr. McAllister, membership organiser, and myself assistant secretary.

Unfortunately, Mr. Bowman, 5FM, has had to resign from the council because of work at night, as he is now an engineer in 5AD. We shall all be sorry that he cannot be on the council, and everyone, especially the country members will join in thanking him for his services to the Institute, and also in wishing him the best of luck.

Mr. McGrath, 5MO, has unfortunately, also had to resign, owing to illness, and we all hope that he will soon be well again, and will be able to join us once more.

The membership rates have been reduced, as we have decided that we must keep as many of our members as we can, and, at the same time, encourage others to join, as our only chance of getting back on the air again is to have a strong and united society of amateurs. The membership rates are now 12/- for city members and 7/6 for country amateurs, and, if by any chance we have a surplus at the end of the year, further reductions will be made. The country subscription has been cut as much as possible, and should only just cover expenses, and all country members are urged to join up again for the coming year, and thus help the Institute to keep going.

The next meeting will take place on Wednesday, May 22nd, and all subsequent meetings will be held quarterly.

(Continued from Page 13)

Other articles included in this issue of Radiotronics give hints on the operation of Radiotron 6J8-G, revised ratings for A.C. types, data on the 1.4 volt super-control R.F. pentode 1P5-GT, a complete 1.4 volt receiver circuit as well as data on new valve types.

Altogether, Radiotronics Bulletin 103 maintains the high standard which we have learnt to associate with this technical publication and is confidently recommended.

Radiotronics is available on subscription, by application to the Amalgamated Wireless Valve Co. Pty. Ltd, and as the new year commences in July, intending subscribers are advised to give some thought to their applications.

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